



Mawlana Bhashani Science And Technology University

## Lab-Report

Report No : 06

Course Code : ICT-3110

Course Title : Operating System Lab.

Date of Performance :

Date of Submission : 30/09/2020

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3<sup>rd</sup> Year 1<sup>st</sup> Semester

Session : 2017-18

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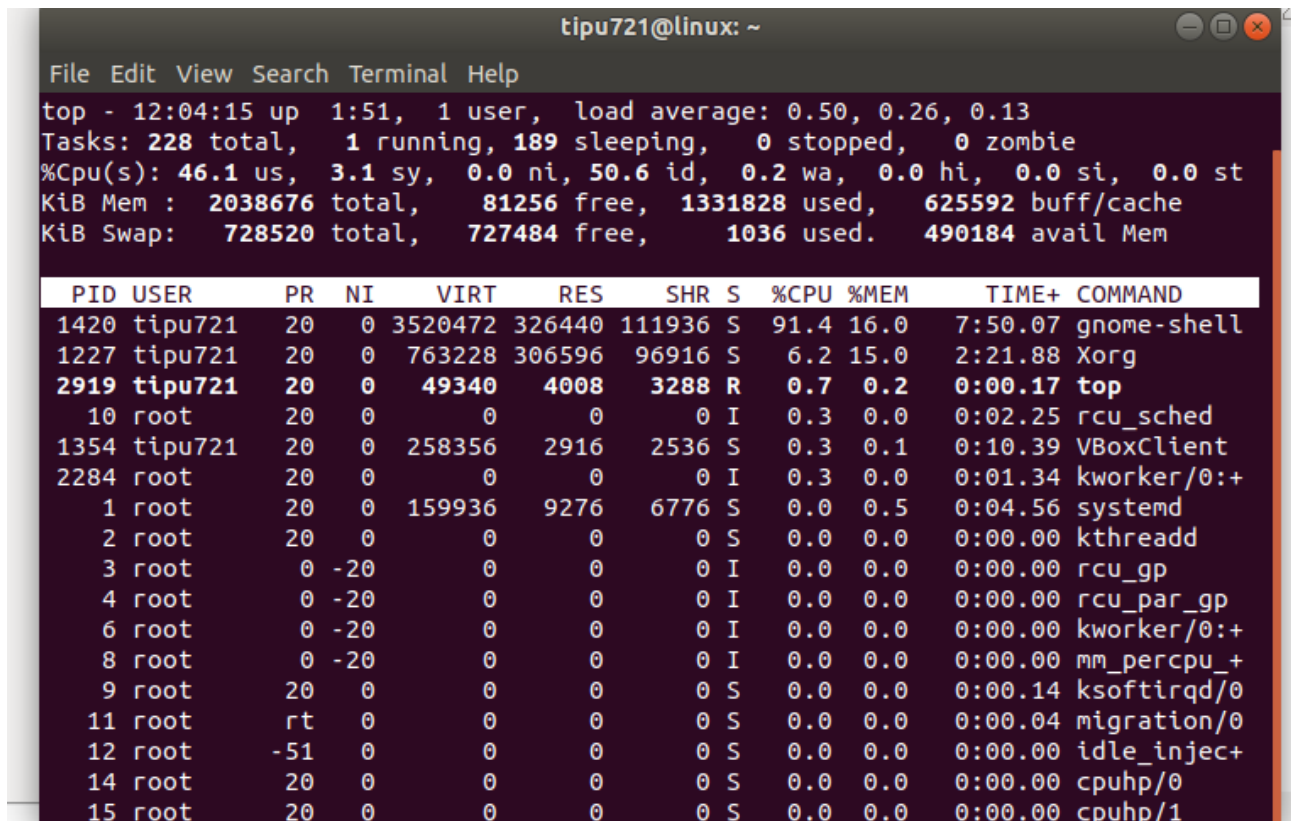
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## command for process in Linux

1) **top**: The top command is the traditional way to view your system's resource usage and see the processes that are taking up the most system resources. Top displays a list of processes, with the ones using the most CPU at the top.

A screenshot of a Linux terminal window showing the output of the 'top' command. The window title is 'tipu721@linux: ~'. The terminal shows system statistics and a list of processes. The process list is a table with columns: PID, USER, PR, NI, VIRT, RES, SHR, S, %CPU, %MEM, TIME+, and COMMAND. The process with PID 2919, user tipu721, is highlighted in red and is running 'top' with 0.7% CPU usage.

```
tipu721@linux: ~
File Edit View Search Terminal Help
top - 12:04:15 up 1:51, 1 user, load average: 0.50, 0.26, 0.13
Tasks: 228 total, 1 running, 189 sleeping, 0 stopped, 0 zombie
%Cpu(s): 46.1 us, 3.1 sy, 0.0 ni, 50.6 id, 0.2 wa, 0.0 hi, 0.0 si, 0.0 st
KiB Mem : 2038676 total, 81256 free, 1331828 used, 625592 buff/cache
KiB Swap: 728520 total, 727484 free, 1036 used. 490184 avail Mem

  PID USER      PR  NI   VIRT    RES    SHR  S  %CPU  %MEM   TIME+ COMMAND
 1420 tipu721   20   0 3520472 326440 111936 S   91.4  16.0   7:50.07 gnome-shell
 1227 tipu721   20   0 763228 306596 96916 S    6.2  15.0   2:21.88 Xorg
 2919 tipu721   20   0  49340   4008   3288 R    0.7   0.2   0:00.17 top
    10 root       20   0     0         0        0 I    0.3   0.0   0:02.25 rcu_sched
 1354 tipu721   20   0 258356   2916   2536 S    0.3   0.1   0:10.39 VBoxClient
 2284 root       20   0     0         0        0 I    0.3   0.0   0:01.34 kworker/0:
    1 root       20   0 159936   9276   6776 S    0.0   0.5   0:04.56 systemd
    2 root       20   0     0         0        0 S    0.0   0.0   0:00.00 kthreadd
    3 root        0 -20     0         0        0 I    0.0   0.0   0:00.00 rcu_gp
    4 root        0 -20     0         0        0 I    0.0   0.0   0:00.00 rcu_par_gp
    6 root        0 -20     0         0        0 I    0.0   0.0   0:00.00 kworker/0:
    8 root        0 -20     0         0        0 I    0.0   0.0   0:00.00 mm_percpu_
    9 root       20   0     0         0        0 S    0.0   0.0   0:00.14 ksoftirqd/0
   11 root       rt    0     0         0        0 S    0.0   0.0   0:00.04 migration/0
   12 root      -51   0     0         0        0 S    0.0   0.0   0:00.00 idle_injec
   14 root       20   0     0         0        0 S    0.0   0.0   0:00.00 cpuhp/0
   15 root       20   0     0         0        0 S    0.0   0.0   0:00.00 cpuhp/1
```

To exit top or htop, use the Ctrl-C keyboard shortcut. This keyboard shortcut usually kills the currently running process in the terminal.

2) **htop**: The **htop** command is an improved top. It's not installed by default on most Linux distributions — here's the command you'll need to install it on Ubuntu:

```
tipu721@linux: ~  
File Edit View Search Terminal Help  
tipu721@linux:~$ sudo apt-get indtall htop  
[sudo] password for tipu721:  
E: Invalid operation indtall  
tipu721@linux:~$ sudo apt-get install htop  
Reading package lists... Done  
Building dependency tree  
Reading state information... Done  
The following NEW packages will be installed:  
  htop  
0 upgraded, 1 newly installed, 0 to remove and 305 not upgraded.  
Need to get 80.0 kB of archives.  
After this operation, 221 kB of additional disk space will be used.  
Err:1 http://bd.archive.ubuntu.com/ubuntu bionic/main amd64 htop amd64 2.1  
  Could not resolve 'bd.archive.ubuntu.com'  
E: Failed to fetch http://bd.archive.ubuntu.com/ubuntu/pool/main/h/htop/ht  
.0-3_amd64.deb  Could not resolve 'bd.archive.ubuntu.com'  
E: Unable to fetch some archives, maybe run apt-get update or try with --f  
sing?  
tipu721@linux:~$
```

sudo apt-get install htop

**3) ps -A :** The **ps** command lists running processes. The following command lists all processes running on your system:

**ps -A**

**4) ps -A | less :** ps -A may be too many processes to read at one time, so we can pipe the output through the **less** command to scroll through them at own pace.

```
tipu721@linux: ~
File Edit View Search Terminal Help
tipu721@linux:~$ ps -A
  PID TTY          TIME CMD
    1 ?           00:00:05 systemd
    2 ?           00:00:00 kthreadd
    3 ?           00:00:00 rcu_gp
    4 ?           00:00:00 rcu_par_gp
    6 ?           00:00:00 kworker/0:0H-kb
    8 ?           00:00:00 mm_percpu_wq
    9 ?           00:00:00 ksoftirqd/0
   10 ?           00:00:02 rcu_sched
   11 ?           00:00:00 migration/0
   12 ?           00:00:00 idle_inject/0
   14 ?           00:00:00 cpuhp/0
   15 ?           00:00:00 cpuhp/1
   16 ?           00:00:00 idle_inject/1
   17 ?           00:00:00 migration/1
   18 ?           00:00:00 ksoftirqd/1
   20 ?           00:00:00 kworker/1:0H-kb
   21 ?           00:00:00 kdevtmpfs
   22 ?           00:00:00 netns
   23 ?           00:00:00 rcu_tasks_kthre
   24 ?           00:00:00 kauditd
   25 ?           00:00:00 khungtaskd
   26 ?           00:00:00 oom_reaper
```

**4) ps -A | less:** ps -A may be too many processes to read at one time, so we can pipe the output through the **less** command to scroll through them at own pace.

ps -A | less:

```
tipu721@linux: ~  
File Edit View Search Terminal Help  
PID TTY          TIME CMD  
  1 ?           00:00:05 systemd  
  2 ?           00:00:00 kthreadd  
  3 ?           00:00:00 rcu_gp  
  4 ?           00:00:00 rcu_par_gp  
  6 ?           00:00:00 kworker/0:0H-kb  
  8 ?           00:00:00 mm_percpu_wq  
  9 ?           00:00:00 ksoftirqd/0  
 10 ?           00:00:02 rcu_sched  
 11 ?           00:00:00 migration/0  
 12 ?           00:00:00 idle_inject/0  
 14 ?           00:00:00 cpuhp/0  
 15 ?           00:00:00 cpuhp/1  
 16 ?           00:00:00 idle_inject/1  
 17 ?           00:00:00 migration/1  
 18 ?           00:00:00 ksoftirqd/1  
 20 ?           00:00:00 kworker/1:0H-kb  
 21 ?           00:00:00 kdevtmpfs  
 22 ?           00:00:00 netns  
 23 ?           00:00:00 rcu_tasks_kthre  
 24 ?           00:00:00 kauditd  
 25 ?           00:00:00 khungtaskd  
 26 ?           00:00:00 oom_reaper
```

Press q to exit when you're done.

**5) ps -A | grep** : We could also pipe the output through **grep** to search for a specific process without using any other commands. The following command would search for the Firefox process:

`ps -A | grep firefox`

**6)**

```
tipu721@linux: ~  
File Edit View Search Terminal Help  
tipu721@linux:~$ ps -A | grep firefox  
tipu721@linux:~$ ps -A | grep firefox  
 3872 tty2      00:00:06 firefox  
tipu721@linux:~$
```

**pstree:**

The **pstree** command is another way of visualizing processes. It displays them in tree format.

```
tipu721@linux: ~
File Edit View Search Terminal Help
tipu721@linux:~$ pstree
systemd--ModemManager--2*[{ModemManager}]
        --NetworkManager--dhclient
                        2*[{NetworkManager}]
        --2*[VBoxClient--VBoxClient]
        --VBoxClient--VBoxClient--2*[{VBoxClient}]
        --VBoxClient--VBoxClient--3*[{VBoxClient}]
        --VBoxService--8*[{VBoxService}]
        --accounts-daemon--2*[{accounts-daemon}]
        --acpid
        --avahi-daemon--avahi-daemon
        --boltd--2*[{boltd}]
        --colord--2*[{colord}]
        --cron
        --cups-browsed--2*[{cups-browsed}]
        --cupsd--3*[dbus]
        --dbus-daemon
        --firefox--Web Content--20*[{Web Content}]
                --Web Content--18*[{Web Content}]
                --WebExtensions--19*[{WebExtensions}]
                --50*[{firefox}]
        --fwupd--4*[{fwupd}]
```

## 7) kill :

The **kill** command can kill a process, given its process ID. You can get this information from the **ps -A, top** or **pgrep** commands.

kill PID

```
tipu721@linux: ~
File Edit View Search Terminal Help
tipu721@linux:~$ kill
kill: usage: kill [-s sigspec | -n signum | -sigspec] pid | jobspec ... or kill
-l [sigspec]
tipu721@linux:~$ ps -A | grep firefox
tipu721@linux:~$ ps -A | grep firefox
3786 tty2    00:00:03  firefox
tipu721@linux:~$
```

## 8) pgrep :

Given a search term, **pgrep** returns the process IDs that match it. For example, you could use the following command to find Firefox's PID:

```
pgrep firefox
```

```
tipu721@linux: ~
File Edit View Search Terminal Help
tipu721@linux:~$ pgrep firefox
4184
tipu721@linux:~$ kill $(pgrep firefox)
tipu721@linux:~$
```

### 9) pkill & killall :

The **pkill** and **killall** commands can kill a process, given its name. Use either command to kill Firefox:

pkill firefox  
killall firefox

```
tipu721@linux: ~
File Edit View Search Terminal Help
tipu721@linux:~$ killall firefox
tipu721@linux:~$ pkill firefox
tipu721@linux:~$
```

### 10) renice:

The **renice** command changes the nice value of an already running process. The nice value determines what priority the process runs with. A value of **-19** is very high priority, while a value of **19** is very low priority. A value of **0** is the default priority.

The renice command requires a process's PID. The following command makes a process run with very low priority:

renice 19 *PID*

```
tipu721@linux: ~  
File Edit View Search Terminal Help  
tipu721@linux:~$ pgrep firefox  
4700  
tipu721@linux:~$ renice 19 4700  
4700 (process ID) old priority 0, new priority 19  
tipu721@linux:~$
```

## Discussion:

An instance of a program is called a Process. In simple terms, any command that you give to your Linux machine starts a new process. Having multiple processes for the same program is possible. ... Background Processes: They run in the background and usually do not need user input.